NATIONAL WATER QUALITY MONITORING COUNCIL

Working Together for Clean Water

NWQMC

Selected Council Highlights and New Products for Your Water Needs

The National Water Quality Monitoring Council (Council) provides a national forum for coordination of comparable and scientifically defensible methods and strategies to improve water quality monitoring, assessment and reporting, and promotes partnerships to foster collaboration, advance the science, and improve management within all elements of the water quality monitoring community. Vital to this role, the Council provides a voice for monitoring practitioners across the Nation and fosters increased understanding and stewardship of our water resources.

The Council was created in 1997 as a vehicle for bringing together diverse expertise needed to develop collaborative, comparable, and cost-effective approaches for monitoring and assessing our Nation's water quality (http://acwi.gov/monitoring). The approaches are fundamental to the successful management and sustainability of our waters, and are increasingly important because water issues are becoming more complex, resources are tighter, and the demand for high-quality water continues to grow in order to support a complex web of human activities and aquatic ecosystem needs.

Each year, thousands of government agencies, Tribes, academic researchers, volunteers, industry and other organizations dedicate significant resources to monitor, assess, protect, and restore our water resources and watersheds across the U.S. Despite such efforts, understanding the condition of the Nation's waters has been limited and fragmented by differences in monitoring designs, sampling and analytical methods. It has also been hampered by inconsistent metadata, data management, and information dissemination. Council goals are thereby set to improve data comparability and reliability; data management, assessment, sharing, and reporting; and collaboration. The goals are accomplished through its workgroups *Collaboration and Outreach, Water Information Strategies,* and *Methods and Data Comparability Board* and through its role with the National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries ("Network"). The Network was initiated by the Council in 2004 in response to a recommendation by the U.S. Commission on Ocean Policy, and provides critical information for national and regional management of coastal ecosystems and their tributaries.

Council goals pursued by its workgroups and the Network are increasingly achievable as technology and expertise advance in data collection and exchange, assessment, and reporting. As a result, the Council and its partners have made significant advances in its priorities, including data management and information dissemination; compatible web services; state and regional councils; volunteer monitoring; assessment and statistical tools; sensors and real-time monitoring; and integrated land-to-sea assessments through the Network. Multiple Council products and services are now available to help meet water needs across the Nation (described below).

The Council is representative of federal, state, interstate, tribal, local, and municipal governments; watershed and environmental groups; the volunteer monitoring community; universities; and the private sector, including the regulated community. Representatives generally serve 3 to 4 year terms.

The Council is co-chaired by the U.S. Geological Survey (USGS) and U.S. Environmental Protection Agency (EPA) and is chartered as a subgroup of the Advisory Committee on Water Information (ACWI) under the Federal Advisory Committee Act.

Council members are organized into work groups, including: Collaboration and Outreach, Water Information Strategies, and the Methods and Data Comparability Board. Workgroup participation is open to non-Council members.

The Council meets three times each year. The meetings are open to non-members through web seminars and teleconferencing. For information on upcoming meetings and topics, contact Pixie Hamilton, pahamilt@usgs.gov, (804) 261-2602 or Wendy Norton, wenorton@usgs.gov, (703) 648-6810.

Council Workgroups

Methods and Data Comparability Board (Methods Board) – Provides a forum for evaluating and promoting methods that facilitate comparability among water-quality monitoring and analytical methods. A major focus currently is on quality control and data management of sensor data by an Aquatic Sensor Workgroup under the Methods Board. (**Contacts:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869 and Gayle Rominger, grominger@ysi.com, (937) 767-7241)

Water Information Strategies Workgroup – Defines and promotes strategies for monitoring designs; data management, access, and exchange; data integration and analysis; and information reporting to address water needs. A major focus by WIS, along with the Methods Board, is to develop a system that guides scientists and managers with a range of statistical information, procedure references, and tools, and that assists in designing monitoring programs to meet specific objectives and converting data into information. (**Contacts:** Peter Tennant, ptennant@orsanco.org, (513) 231-7719, Mary Skopec, mary.skopec@dnr.iowa.gov, (319) 335-1579, Doug McLaughlin, douglas.mclaughlin@wmich.edu, (269)-276-3545, Leslie McGeorge, leslie.mcgeorge@dep.state.nj.us, (609) 292-1254, and Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869)

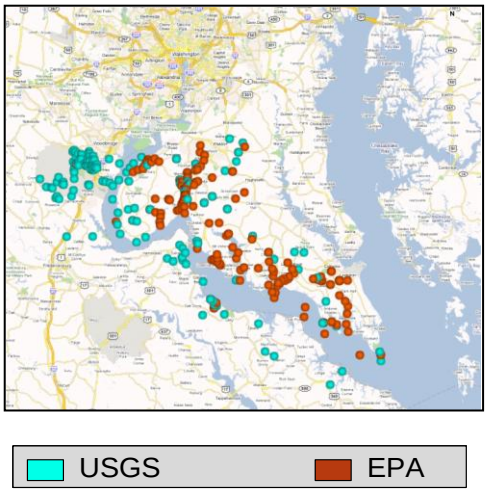
Collaboration and Outreach Workgroup – Works to build partnerships that foster collaboration and communication within the water-quality monitoring community. **(Contact:** Tracy Hancock, thancock@usgs.gov, (804) 261-2618)

Selected Highlights, Accomplishments, and Council Products for Your Water Needs

Compatible Web Services Available for Water Quality Exchange

Compatible web services and a shared data exchange, called the Water Quality Exchange (WQX), are now available that allow retrieval of data from multiple sources in common formats for direct use in mapping, statistical, and modeling applications. The ability to retrieve data in common formats simplifies the task of bringing together a wide range of information that can be used to describe the status and trends of water quality in our Nation's streams, groundwater and estuaries.

Chemical, physical, and biological data from the USGS National Water Information System (NWIS) (http://qwwebservices.usgs.gov) and data housed in the EPA Storage and Retrieval (STORET) (http://storetnwis.epa.gov/storetqw/portal.html#) are readily accessible online in a compatible format that employs data elements developed through the Council. Data collected by USGS and by states and tribes (submitted to EPA-STORET) thereby conform to a common nomenclature for biological and physical elements, chemical substances, chemical groups, sites, types, and sampling media. In total, over 150 million water-quality results are available from the two systems.



Application of the Water Quality Exchange (WQX) along the lower Potomac River yields a merged dataset that includes 161 USGS-NWIS and 169 EPA-STORET sites.

Efforts are ongoing for the continued development of simple web forms and querying capabilities on the Internet with user-friendly mapping tools, as well as access from a single, national, water-data portal (available in 2010).

The USGS/EPA activities began in 2003, resulting from an interagency *Agreement on the Management of Water Quality Data*, supported by the Advisory Committee on Water Information. USGS and EPA continue to work with data managers associated with other Federal agencies, including USDA's Agricultural Research Service (ARS) to integrate its STEWARDS data system, housing water, conservation and other land data, with the WQX.

Efforts also are ongoing with NOAA and the Integrated Ocean Observing System (IOOS), associated regional associations, and the Northeast Coastal and Ocean Data Partnership on extending the WQX and common web services to coastal data and improving capabilities beyond discrete data to include continuous and sensor data. (**Contacts:** Nate Booth, nlbooth@usgs.gov, (608) 821-3822 and Kristen Gunthardt, gunthardt.kristen@epa.gov, (202) 566-1194)

Guides for Sensors Are Now Available through a Council Supported Public/Private Partnership

Four products developed through the sensor partnership are now available, including: (1) a checklist for users related to calibration and record keeping to ensure that data are of known and documented quality; (2) a deployment guide to assist in siting and maintaining sensors in the field; (3) data elements (or metadata) for sensors; and, (4) a glossary of terms.

Freshwater sensor manufacturers have played an active role, along with governmental and non-governmental organizations, to develop guides for deploying sensors, with YSI co-chairing and funding much of the effort. Future efforts will extend the public/private partnership to the Alliance for Coastal Technologies to integrate sensor information with NEMI; develop data management capabilities for sensor data; and assess the relevance and utility of sensor data to meet management needs. Additional information can be found at http://watersensors.org. (**Contacts:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869 and Gayle Rominger, grominger@ysi.com, (937) 767-7241)

National Environmental Methods Index Celebrates Its Tenth Year

The National Environmental Methods Index (NEMI) celebrates its 10th year in 2010 as an online resource of laboratory methods and field protocols, including more than 1,100 methods for chemical, biological and physical monitoring (http://www.nemi.gov). Recent improvements to NEMI include a user-friendly format for enhanced accessibility by stakeholders. "MethodsML" is being explored, which is an XML standard for analytical methods. Collaboration is ongoing with EPA's Forum on Environmental Management to leverage comparability among methods and laboratory services across the Nation. (**Contact:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869)

Physical Habitat Data Are Included as National Data Elements

Approved data elements for physical habitat are available for streams, which expand the already available key data elements (or "core metadata") for chemical, microbiological, toxicity testing, and biological population/community data (http://acwi.gov/methods/pubs/wdqe_pubs/wqde_trno3.pdf). A Council priority is to continue to promote the use of all data elements among the water community to help facilitate comparisons and integration of data collected by multiple organizations. (**Contact:** Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869)

Council Hosts Its 7th Biennial National Conference

A centerpiece forum for communication and collaboration among the monitoring community is the Council's biennial national conference. The 7th national conference in Denver explores many water monitoring issues—from the summit to the sea. More than 700 water practitioners from all backgrounds—including governmental organizations, tribes, volunteers, academia, watershed and environmental groups, and the private sector—showcase new findings on the quality of the Nation's waters and highlight new innovations and cutting-edge tools in water-quality monitoring, assessment, and reporting. (**Contacts**: Chuck Spooner, spooner.charles@epa.gov, (202)-566-1174, Jeff Schloss, jeff.schloss@unh.edu , (603) 862-3848 and Doug Glysson, gglysson@usgs.gov, (703) 648-5019)

White Paper is Released on Council Goals for Water Quality Statistics and Assessment Tools

A white paper, released at the 7th Council's biennial conference in Denver, describes the development of a system that will guide scientists and managers with a range of statistical information, procedure references, and tools, and will assist in designing and analyzing monitoring data to meet specific assessment and research objectives (http://acwi.gov/monitoring). (**Contacts:** Doug McLaughlin, douglas.mclaughlin@wmich.edu , (269)-276-3545, Leslie McGeorge, leslie.mcgeorge@dep.state.nj.us, (609) 292-1254, and Dan Sullivan, djsulliv@usgs.gov, (608) 821-3869)

Online Newsletter Released – *The National Water Monitoring News*

The first issue of the Council's bi-annual, online newsletter for the water monitoring community, released at the Council's 7th biennial conference in Denver, highlights activities of the national Council and those of state, regional, and tribal councils, watershed partnerships, and volunteer monitoring groups. Articles are included on monitoring success stories and other relevant topics on monitoring designs and assessments; related upcoming events, conferences, and links; and grant timelines (http://acwi.gov/monitoring). (**Contact:** Tracy Hancock, thancock@usgs.gov, 804-261-2618)

Council Hosts Web Seminars for State, Regional and Tribal Councils and Watershed Partnerships

The Council strives to support the creation and sustaining of partnerships among the water monitoring community, including state, regional, and tribal councils, as well as watershed groups and alliances, and currently interacts with more than 15 Councils and partnerships across the Nation. Through the development of a "How To Tool Kit" and hosting of web seminars, information is exchanged on success stories and challenges, support and funding, membership and operation, monitoring conferences, data and information exchange, leveraging resources, and building commonality in water management. Three web seminars have been hosted to date, which highlighted a presentation by Virginia's Monitoring Council on an online database tool and the integration of citizen monitoring data into the state assessment report, as well as presentations on new web technologies and social media tools for the water monitoring community. (**Contact:** Tracy Hancock, thancock@usgs.gov, 804-261-2618)

A citizen monitor with Alliance for Chesapeake Bay prepares to collect water samples near the U.S. Naval Academy, where submerged aquatic vegetation is being replanted. Some citizen data were used in Bay studies of these aquatic plants, which are vital to the Bay's health. (Photo by Bob Murphy, Alliance for Chesapeake Bay.)

Volunteer Monitoring Community Continues to Grow

The Council continues to support the volunteer monitoring community through web seminars, meetings, and conferences in which information is exchanged on volunteer efforts at local and national levels. The information exchange helps to better define the role of the volunteer community in state monitoring and assessment programs, and to share benefits and challenges associated with running a volunteer monitoring program. Planning for each national Council conference includes securing travel assistances for volunteer program coordinators; much appreciation is extended to YSI, Inc. for providing travel support to the Council's 7th biennial conference in Denver. (**Contact**: Linda Green, lgreen@uri.edu, (401) 874-2905)

Integrated Land-to-Sea Assessments Advance the National Monitoring Network Concepts

The National Water Quality Monitoring Network for U.S. Coastal Waters and their Tributaries ("Network") provides information about the health of our oceans and coastal ecosystems and inland influences on coastal waters for improved resource management (http://acwi.gov/monitoring/network/index.html). This Network is, in reality, comprised of a "network of networks" and represents an integrated, multidisciplinary, and multi-organizational approach that leverages diverse sources of data and information; augments existing monitoring programs; and links observational capabilities. These networks include federal agencies, the Integrated Ocean Observing System (IOOS), and regional associations representing a broad community of users, including coastal and inland states, tribes, researchers, and non-governmental organizations.

Through Coastal Action Money provided in support of the Ocean Research Priorities plan, design concepts of the Network have been implemented since 2007 in three areas, including Lake Michigan, led by the Great Lakes Commission; Delaware Bay, led by the Delaware River Basin Commission; and San Francisco Bay, led by the San Francisco Estuary Institute. Activities are coordinated with IOOS regional associations, including the Mid-Atlantic Coastal Ocean Observing Regional Association (MACOORA), Great Lakes Observing System (GLOS), and Central and Northern California Ocean Observing System (CenCOOS).

Activities in the three Network areas are successfully improving estimates of oceanic and land-based inputs of sediment, nutrients, and contaminants to U.S. coastal waters and estuaries, and improving assessments on the sources, amounts, timing, and severity of natural and anthropogenic stressors on coastal ecosystems. Findings are useful to compare responses of different estuarine and coastal waters to these stressors, which help to facilitate water-management decisions in other U.S. waters. In addition, the projects continue to provide added value in innovative technology and monitoring, such as in real-time monitoring with sensors and autonomous underwater vehicles (AUVs), which also is transferrable to other parts of the Nation.

More detailed information on land-to-sea assessments in the three Network areas and other U.S. coastal waters is available at http://acwi.gov/monitoring. (**Contacts:** Pixie Hamilton, pahamilt@usgs.gov, (804) 261-2602 and Tracy Hancock, thancock@usgs.gov, (804) 261-2618)

Additional information on Council activities can be obtained through the Council website, http://acwi.gov/monitoring/ and through the Council Co-Chairs, Chuck Spooner, USEPA, spooner.charles@epa.gov, (202) 566-1174 and Pixie Hamilton, USGS, pahamilt@usgs.gov, (804) 261-2602.